Claims:

1. An integrated process for the production of acetic acid and/or vinyl acetate which comprises the steps:-

(a) contacting in a first reaction zone a gaseous feedstock comprising ethylene and/or ethane and optionally steam with a molecular oxygen-containing gas in the presence of a catalyst active for the oxidation of ethylene to acetic acid and/or ethane to acetic acid and ethylene to produce a first product stream comprising acetic acid, water and ethylene (either as unreacted ethylene and/or as co-produced ethylene) and optionally also ethane, carbon monoxide, carbon dioxide and/or nitrogen;

(b) contacting in a second reaction zone in the presence or absence of additional ethylene and/or acetic acid at least a portion of the first gaseous product stream comprising at least acetic acid and ethylene and optionally also one or more of water, ethane, carbon monoxide, carbon dioxide and/or nitrogen with a molecular oxygen-containing gas in the presence of a catalyst active for the production of vinyl acetate to produce a second product stream comprising vinyl acetate, water, acetic acid and optionally ethylene;

(c) separating the product stream from step (b) by distillation into an overhead azeotrope fraction comprising vinyl acetate and water and a base fraction comprising acetic acid;

(d) either (i) recovering acetic acid from the base fraction separated in step (c) and optionally recycling the azeotrope fraction separated in step (c) after partial or complete separation of the water therefrom to step (c),

or (ii) recovering vinyl acetate from the azeotrope fraction separated in step (c) and optionally recycling the base fraction separated in step (c) to step (b),

or (iii) recovering acetic acid from the base fraction separated in step (c)

and recovering vinyl acetate from the overhead azeotrope fraction recovered in step (c).

2. A process according to claim 1 wherein acetic acid is recovered from the base fraction separated in step (c) and the azeotrope fraction separated in step (c) is recycled after partial or complete separation of the water therefrom to step (c).

3. A process according to claim 1 wherein vinyl acetate is recovered from the azeotrope fraction separated in step (c) and the base fraction separated in step (c) is recycled to step (b).

4. A process according to claim 1 wherein acetic acid is recovered from the base fraction separated in step (c) and vinyl acetate is recovered from the azeotrope fraction recovered in step (c).

5. A process according to either claim 3 or claim 4 wherein vinyl acetate is recovered from the azeotrope fraction separated in step (c) by decantation.

6. A process according to any one of the preceding claims wherein acetic acid is recovered from the gaseous product from step (a).

7. A process according to any one of the preceding claims wherein water (steam) is fed to the first reaction zone along with the ethylene and/or ethane feedstock and molecular oxygen-containing gas.

8. A process according to any one of the preceding claims wherein an additional catalyst component is used in the first reaction zone to oxidise carbon monoxide to carbon dioxide.

9. A process according to any one of the preceding claims wherein ethylene and ethane are fed to the first reaction zone.

10. A process according to any one of the preceding claims wherein the molecular oxygen-containing gas used in the first reaction zone is oxygen.

11. A process according to any one of the preceding claims wherein the molecular oxygen-containing gas is fed to the first reaction zone independently from the ethylene and/or ethane feedstock.

12. A process according to any one of the preceding claims wherein the molecular oxygen-containing gas is fed independently to the second reaction zone from the acetic acid and ethylene reactants.

13. A process according to any one of the preceding claims wherein additional ethylene and/or acetic acid is fed to the second reaction zone.

14. A process according to any one of the preceding claims wherein a palladium-containing catalyst is used in the second reaction zone and carbon

monoxide from the first reaction zone is consumed by reaction therewith.

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